

11/12

Radical Review

$$\sqrt{36}$$

$$2 \cdot 3$$

$$\boxed{6}$$



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Steps

- ① Factor Tree
- ② At prime #s (circle)
each pair \rightarrow $\boxed{\text{Box}}$ other
prime #s
- ③ Write each pair once on outside
- ④ Write each single on inside
"couples go out, singles stay in"

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ex

$$\sqrt{50}$$

50
^
10
^
2 5

5

5 2

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$$\sqrt{45}$$
$$= 3\sqrt{5}$$

45
^
9 5
^
3 3

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$$\sqrt{56}$$

$$2\sqrt{14}$$

$$56$$

$$\swarrow \searrow$$

$$8 \quad \boxed{7}$$

$$\swarrow \searrow$$

$$4 \quad \boxed{2}$$

$$\swarrow \searrow$$

$$\textcircled{2} \quad \textcircled{2}$$

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$$\sqrt{24}$$

$$2\sqrt{6}$$

$$24$$

$$\swarrow \searrow$$

$$8 \quad \boxed{3}$$

$$\swarrow \searrow$$

$$4 \quad \boxed{2}$$

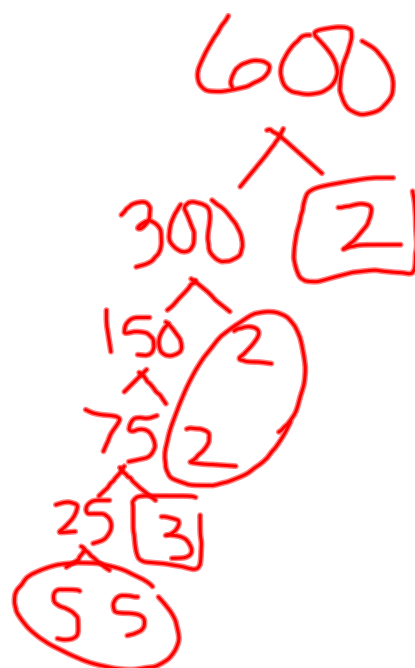
$$\swarrow \searrow$$

$$\textcircled{2} \quad \textcircled{2}$$

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$$\sqrt{600}$$

$$10\sqrt{6}$$



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Do

$$\textcircled{1} \sqrt{75}$$

$$5\sqrt{3}$$

$$\textcircled{2} \sqrt{48}$$

$$4\sqrt{3}$$



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ex

$$\sqrt{30}$$

$$\begin{array}{c} \swarrow \searrow \\ 5 \quad 6 \\ \quad \swarrow \searrow \\ \quad 2 \quad 3 \end{array}$$

No couples

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on Outside

ex

$$\begin{array}{c} 5\sqrt{8} \\ \downarrow \\ 5 \cdot 2\sqrt{2} \\ \hline 10\sqrt{2} \end{array}$$

$$\begin{array}{c} 8 \\ \swarrow \searrow \\ 4 \quad [2] \\ \swarrow \searrow \\ (2) \quad (2) \\ \hline 2\sqrt{2} \end{array}$$

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ex

$$3\sqrt{12}$$

$$\downarrow$$

$$3 \quad 2\sqrt{3}$$

$$(6\sqrt{3})$$

$$12$$

$$4\sqrt{3}$$

$$(22)$$

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Do:

$$4\sqrt{18}$$

$$\downarrow$$

$$9 \quad 2$$

$$3 \quad 3$$

$$4 \quad 3\sqrt{2}$$

$$(12\sqrt{2})$$

$$18$$

$$6 \quad 3$$

$$(2) \quad (3)$$

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Variable

$$\sqrt{25x^2}$$

$$\boxed{5x}$$

$$\begin{array}{c} x^2 \\ \triangle \\ \textcircled{x \cdot x} \end{array}$$

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$$\sqrt{25} = \boxed{5}$$

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$$\sqrt{63y^3}$$

$$3y\sqrt{7y}$$

$$\begin{array}{c} 63 \\ \uparrow \\ 9 \square 7 \\ \uparrow \\ \textcircled{33} \end{array}$$

$$\begin{array}{c} \cancel{x^3} \\ \textcircled{y} \textcircled{y} \square y \end{array}$$

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$$\sqrt{18x^3y^4}$$

$$3xy^2\sqrt{2x}$$

$$\textcircled{xx} \square x$$

$$\textcircled{yy} \textcircled{yy}$$

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Multiplication

inside \times inside
outside \times outside

ex $8\sqrt{2} \cdot 5\sqrt{6}$

$$\begin{array}{r} 40\sqrt{12} \\ \downarrow \\ 40 \quad 2\sqrt{3} \\ \boxed{80\sqrt{3}} \end{array}$$

$$\begin{array}{r} 12 \\ \swarrow \searrow \\ \boxed{3} \quad 4 \\ \quad \downarrow \\ \quad \boxed{22} \end{array}$$

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ex $4\sqrt{2} \cdot 3\sqrt{8}$

$$12\sqrt{16}$$

$$12 \cdot 4$$

$$\boxed{48}$$

$$\begin{array}{r} 16 \\ \swarrow \searrow \\ 8 \quad 2 \\ \downarrow \quad \downarrow \\ 4 \quad 2 \\ \boxed{22} \end{array}$$

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ex

$$3\sqrt{5} \cdot 7\sqrt{8}$$

$$21\sqrt{40}$$

$$\downarrow$$

$$21 \quad 2\sqrt{10}$$

$$(42\sqrt{10})$$

$$40$$

$$\swarrow \searrow$$

$$4 \quad 10$$

$$\swarrow \searrow \swarrow \searrow$$

$$(2) (2) (2) (5)$$

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$$\sqrt{36}$$

$$6$$

$$\sqrt{144}$$

$$12$$

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